Notice of Allowability 10/511,777 MUSSIG, HANS-JOACHIM		Application No.	Applicant(s)		
Notice of Allowability Examiner Art Unit Nguyen T. Ha 2831	Notice of Allowability	40/544 777	1410010 HAND 104		
Nguyen T. Ha 2831				СНІМ	
Th MAILING DATE of this communication appears on the cover sheet with the correspondence address-All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not include in right of the office or upon petition by the applicant. See 37 OFR 1.313 and MPEP 1308. 1. ☑ This communication is responsive to 3/9/2006. 2. ☑ The allowed claim(s) is/are 1-12. 3. ☑ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f). a) ☑ All b) ☐ Some* c) ☐ None of the: 1. ☑ Certified copies of the priority documents have been received. 2. ☐ Certified copies of the priority documents have been received in Application No. 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the international Bureau (PCT Rule 17.2(a)). * Certified copies not received: Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to limely comply will result in ABANDONMENT of this application. THIS THREEMONTH PERIOD IS NOT EXTENDABLE. 4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMALE PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient. 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted. (a) ☐ including changes required by the Notice of Drattsperson's Patent Drawing Review (PTO-948) attached 1) ☐ hereto or 2) ☐ to Paper No./Mail Date	•				
All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included he in with for previously mailed, a Notice of Allowance (PTOL-85) or other appropriate communication will be main die use course. THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS. This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308. 1. \[\] This communication is responsive to \(\frac{9/9/2006}{2/9/2006} \). 2. \[\] The allowed claim(s) is/are \(\frac{1-12}{2} \). 3. \[\] Acknowledgment is made of a claim for foreign priority under 35 U.S.C. \(\) \(\) \(\) 119(a)-(d) or \(\) (f). a) \[\] All \(\) b) \[\] Some 'c \(\) \[\] None of the: 1. \[\] Certified copies of the priority documents have been received. 2. \[\] Certified copies of the priority documents have been received in Application No. 3. \[\] Copies of the certified copies of the priority documents have been received in this national stage application from the international Bureau (PCT Rule 17.2(a)). **Certified copies not received: 4. \[\] Applicant has THREE MONTHS FROM THE "MALING DATE" of this communication to file a reply complying with the requirements rocked below. Failure to timely comply will result in ABANDONMENT of this application. THIS THREE-MONTH PERIOD IS NOT EXTENDABLE 4. \[\] A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient. 5. \[\] CORRECTED DRAWINGS (as "replacement sheets") must be submitted. (a) \[\] including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached 1) \[\] hereto or 2; \[\] to Paper No./Mail Date \[\] (b) \[\] including changes required by the attached Examiner's Amendment / Comment or the drawings in the front (not the back) of each sheet. Replacement sheet sheet	1	Nguyen T. Ha	2831		
2. ☑ The allowed claim(s) is/are 1_12. 3. ☑ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f). a) ☑ All b) ☐ Some* c) ☐ None of the: 1. ☑ Certified copies of the priority documents have been received. 2. ☐ Certified copies of the priority documents have been received in Application No 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)). **Certified copies not received: Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE** 4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient. 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted. (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached 1) ☐ hereto or 2) ☐ to Paper No./Mail Date (b) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached 10 ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL. **Attachm nt(s)** 1. ☑ Notice of Paper No./Mail Date 2. ☐ Notice of Paper No./Mail Date 3. ☐ Information Disdosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Malerial **Depart No./Mail Date 4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Malerial	All claims being allowable, PROSECUTION ON THE MERITS IS h r with (or previously mailed), a Notice of Allowance (PTOL-85) NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RI	(OR REMAINS) CLOSED or other appropriate comm GHTS. This application is	in this application. If not include nunication will be mailed in due o	d course. THIS	
3.	1. This communication is responsive to 3/9/2006.			À	
a) All b) Some* c) None of the: 1.	2. The allowed claim(s) is/are <u>1-12</u> .				
* Cerlified copies not received: Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. THIS THREE-MONTH PERIOD IS NOT EXTENDABLE. 4. A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient. 5. CORRECTED DRAWINGS (as "replacement sheets") must be submitted. (a) including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached 1) hereto or 2) to Paper No./Mail Date (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d). 6. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL. Attachm nt(s) 1. Notice of References Cited (PTO-892) 2. Notice of Draftperson's Patent Drawing Review (PTO-948) 3. Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 7. Examiner's Amendment/Comment Paper No./Mail Date 8. Examiner's Statement of Reasons for Allowance of Biological Material 9. Other NGUYENT. HA	 a) ☑ All b) ☐ Some* c) ☐ None of the: 1. ☑ Certified copies of the priority documents have 2. ☐ Certified copies of the priority documents have 	been received. been received in Applicati	on No	on from the	
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. THIS THREE-MONTH PERIOD IS NOT EXTENDABLE. 4. A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient. 5. CORRECTED DRAWINGS (as "replacement sheets") must be submitted. (a) including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached 1) hereto or 2) to Paper No./Mail Date (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date including changes required by the attached Examiner's Comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's Comment regarding Requirement for Deposit of Draftperson's Patent Drawing Review (PTO-948) 5. Notice of Informal Patent Application (PTO-152) 6. Interview Summary (PTO-413), Paper No./Mail Date interview Summary (PT					
noted below. Failure to timely comply will result in ABANDONMENT of this application. THIS THREE-MONTH PERIOD IS NOT EXTENDABLE. 4. A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient. 5. CORRECTED DRAWINGS (as "replacement sheets") must be submitted. (a) including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached 1) hereto or 2) to Paper No./Mail Date (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date (b) Antice of Information of the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d). 6. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL. Attachm nt(s) 1. Notice of References Cited (PTO-892) 2. Notice of Draftperson's Patent Drawing Review (PTO-948) 3. Information Discosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date Paper No./Mail Date 1. Examiner's Comment Regarding Requirement for Deposit of Biological Material 9. Other NGUYEN T. HA	* Certified copies not received:				
INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient. 5. CORRECTED DRAWINGS (as "replacement sheets") must be submitted. (a) Including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached 1) hereto or 2) to Paper No./Mail Date (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date Identifying indicta such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d). 6. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL. Attachm nt(s) 1. Notice of References Cited (PTO-892) 2. Notice of Draftperson's Patent Drawing Review (PTO-948) 3. Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date Paper No./Mail Date 4. Examiner's Comment Regarding Requirement for Deposit of Biological Material 9. Other NGUYENT. HA	noted below. Failure to timely comply will result in ABANDONM		e a reply complying with the requ	uirements	
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached 1) ☐ hereto or 2) ☐ to Paper No./Mail Date (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d). 6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL. Attachm nt(s) 1. ☑ Notice of References Cited (PTO-892) 2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) 3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 7. ☐ Examiner's Amendment/Comment Pagarding Requirement for Deposit of Biological Material 9. ☐ Other NGUYEN T. HM				TICE OF	
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d). 6. □ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL. Attachm nt(s) 1. ☑ Notice of References Cited (PTO-892) 2. □ Notice of Draftperson's Patent Drawing Review (PTO-948) 3. □ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 4. □ Examiner's Comment Regarding Requirement for Deposit of Biological Material 8. ☑ Examiner's Statement of Reasons for Allowance of Biological Material	 (a) ☐ including changes required by the Notice of Draftspers 1) ☐ hereto or 2) ☐ to Paper No./Mail Date (b) ☐ including changes required by the attached Examiner's 	on's Patent Drawing Revie			
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL. Attachm nt(s) 1. ☑ Notice of References Cited (PTO-892) 2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) 3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 7. ☐ Examiner's Amendment/Comment Paper No./Mail Date 4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material NGUYENT. HA	Identifying indicia such as the application number (see 37 CFR 1.	84(c)) should be written on t	he drawings in the front (not the b	ack) of	
 Notice of References Cited (PTO-892) Notice of Draftperson's Patent Drawing Review (PTO-948) Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date Examiner's Comment Regarding Requirement for Deposit of Biological Material Notice of Informal Patent Application (PTO-152) Interview Summary (PTO-413), Paper No./Mail Date Examiner's Amendment/Comment Examiner's Statement of Reasons for Allowance Other	6. DEPOSIT OF and/or INFORMATION about the depos	sit of BIOLOGICAL MAT	ERIAL must be submitted. No	ote the	
Paper No./Mail Date Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date Examiner's Amendment/Comment Examiner's Comment Regarding Requirement for Deposit of Biological Material Paper No./Mail Date Examiner's Amendment/Comment 8. ☑ Examiner's Statement of Reasons for Allowance NGUYEN T. HA		5. ☐ Notice of Ir	nformal Patent Application (PTO	-152)	
 3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date	2. Notice of Draftperson's Patent Drawing Review (PTO-948)				
 4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material 8. ☑ Examiner's Statement of Reasons for Allowance 9. ☐ Other 	Information Disclosure Statements (PTO-1449 or PTO/SB/08 Paper No /Mail Date	Paper No. 8), 7.			
9. Other NGUYEN T. HA	4. Examiner's Comment Regarding Requirement for Deposit	8. 🛭 Examiner's	8. Examiner's Statement of Reasons for Allowance		
$\langle \cdot \cdot \cdot \rangle$	5g.a	9.			

U.S. Patent and Trademark Office PTOL-37 (Rev. 7-05)

Notice of Allowability

Part of Paper No./Mail Date 1

Art Unit: 2831

DETAILED ACTION

Response to Arguments

1. The applicant's arguments that Kwong et al. in view of Bhattacharyya are failed to disclose a semiconductor capacitor comprising a dielectric including praseodymium oxide between the capacitor electrodes, characterized in that provided between the capacitor dielectric and a first semiconductor layer is a first thin intermediate layer serving as a diffusion barrier for oxygen. The examiner finds this argument persuasive. Therefore, the examiner made decision to allow this limitation over the prior art of record.

Allowable Subject Matter

2. Claims 1-12 are allowed.

The following is an examiner's statement of reasons for allowance:

With respect to claim 1, the prior art alone or in combination does not teach the limitation of a semiconductor capacitor comprising a dielectric including praseodymium oxide between the capacitor electrodes, characterized in that provided between the capacitor dielectric and a first semiconductor layer is a first thin intermediate layer serving as a diffusion barrier for oxygen.

Claims 2-12 are depend on claim 1, they are allowed for the same reason.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly lab-led "Comments on Statement of Reasons for Allowance."

Application/Control Number: 10/511,777 Page 3

Art Unit: 2831

Citation Relevant of Prior Art

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Ahn et al. (US 6,979,855) disclose high-quality praseodymium gate dielectrics.
 - b. Meng et al. (US 6,967,154) disclose enhance atomic layer deposition.
- c. Brask et al. (US 6,897,134) disclose a method for making a semiconductor device having a high-k gate dielectric.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nguyen T. Ha whose telephone number is 571-272-1974. The examiner can normally be reached on Monday-Friday from 8:30AM to 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 571-272-2800 ext. 31. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NGUYEN T. HA PRIMARY EXAMINER

> NH May 27, 2006